



# **Publications Issues in Large Scientific Collaborations: ATLAS as an Example**

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# Outline

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- What is ATLAS?
- Where are its 2000+ collaborators?
- How is ATLAS Organized?
- Data Flow and Computing Organization
- What is an ATLAS Author?
  - ◆ Key issue – recognition of an individual's accomplishments
- What is the method of Internal Refereeing and approving a publication?
- Open Access Journals
- Preserving results in the future



# The ATLAS Experiment

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- **A Toroidal LHC ApparatuS (= ATLAS)**
- **Large Hadron Collider (=LHC) at CERN - Geneva, Switzerland**
  - ♦ **14 TeV proton-proton collisions at  $10^{10}$  (10,000,000,000) interactions/second.**
  - ♦ **That is 25 interactions every 25 nanoseconds!**
- **ATLAS has over 2000 scientists and engineers from 37 countries and 167 institutions**
- **We aim to answer fundamental questions in particle physics: What gives particles their mass, what constitutes Dark Matter, are there extra dimensions beyond 4...**
- **First beam collisions scheduled for late 2009**



# Large Hadron Collider





# ATLAS Collaboration

(Status October 2007)

37 Countries  
167 Institutions  
2000 Scientific Authors total  
(1600 with a PhD)

*The U.S. is 20% of the  
authors – largest single  
country. U.S. share of  
construction was \$164M  
~20% of total.*

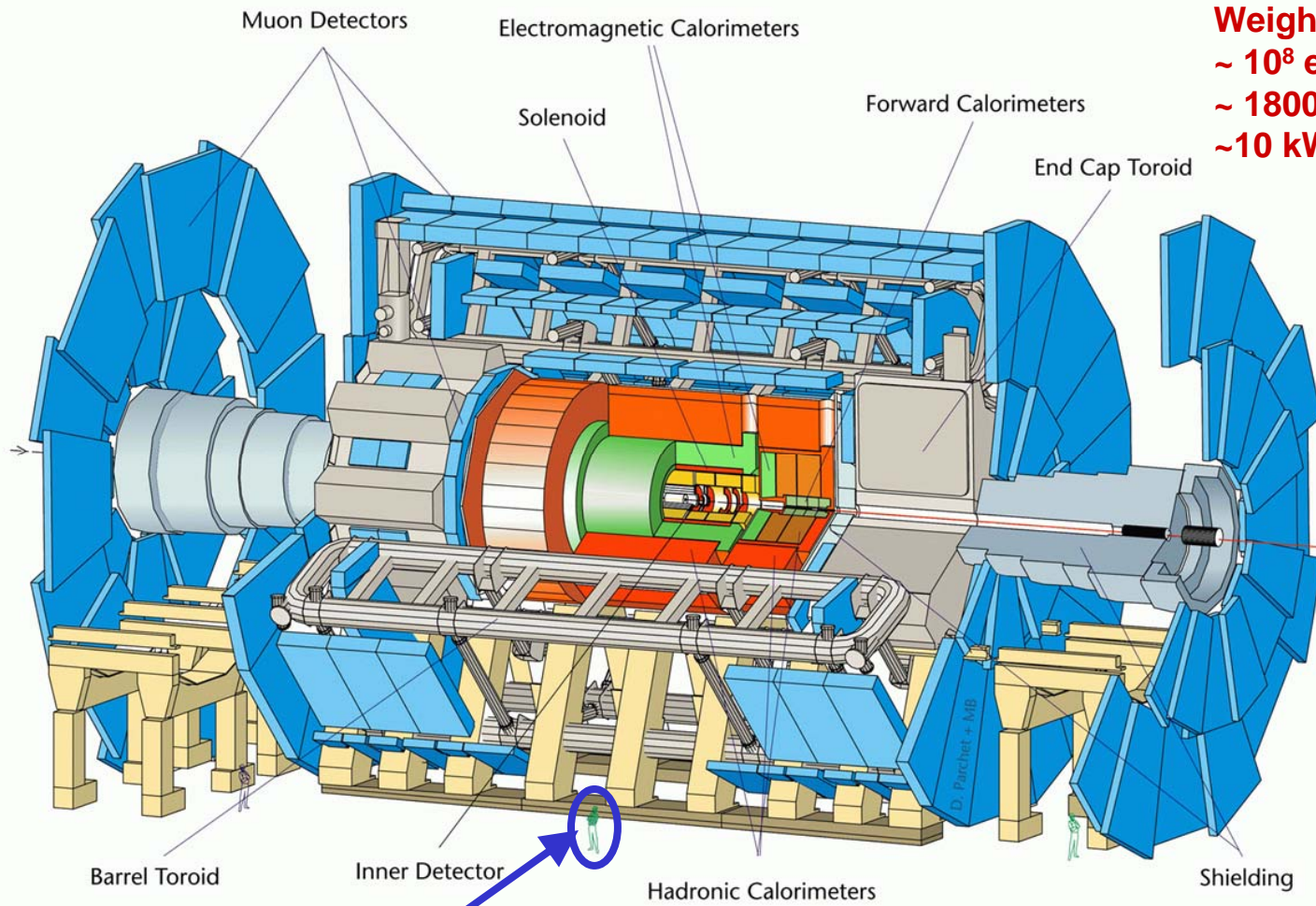


Albany, Alberta, NIKHEF Amsterdam, Ankara, LAPP Annecy, Argonne NL, Arizona, UT Arlington, Athens, NTU Athens, Baku, IFAE Barcelona, Belgrade, Bergen, Berkeley LBL and UC, HU Berlin, Bern, Birmingham, Bologna, Bonn, Boston, Brandeis, Bratislava/SAS Kosice, Brookhaven NL, Buenos Aires, Bucharest, Cambridge, Carleton, Casablanca/Rabat, CERN, Chinese Cluster, Chicago, Clermont-Ferrand, Columbia, NBI Copenhagen, Cosenza, AGH UST Cracow, IFJ PAN Cracow, DESY, Dortmund, TU Dresden, JINR Dubna, Duke, Frascati, Freiburg, Geneva, Genoa, Giessen, Glasgow, Göttingen, LPSC Grenoble, Technion Haifa, Hampton, Harvard, Heidelberg, Hiroshima, Hiroshima IT, Indiana, Innsbruck, Iowa SU, Irvine UC, Istanbul Bogazici, KEK, Kobe, Kyoto, Kyoto UE, Lancaster, UN La Plata, Lecce, Lisbon LIP, Liverpool, Ljubljana, QMW London, RHBNC London, UC London, Lund, UA Madrid, Mainz, Manchester, Mannheim, CPPM Marseille, Massachusetts, MIT, Melbourne, Michigan, Michigan SU, Milano, Minsk NAS, Minsk NCPHEP, Montreal, McGill Montreal, FIAN Moscow, ITEP Moscow, MEPhI Moscow, MSU Moscow, Munich LMU, MPI Munich, Nagasaki IAS, Nagoya, Naples, New Mexico, New York, Nijmegen, BINP Novosibirsk, Ohio SU, Okayama, Oklahoma, Oklahoma SU, Oregon, LAL Orsay, Osaka, Oslo, Oxford, Paris VI and VII, Pavia, Pennsylvania, Pisa, Pittsburgh, CAS Prague, CU Prague, TU Prague, IHEP Protvino, Regina, Ritsumeikan, UFRJ Rio de Janeiro, Rome I, Rome II, Rome III, Rutherford Appleton Laboratory, DAPNIA Saclay, Santa Cruz UC, Sheffield, Shinshu, Siegen, Simon Fraser Burnaby, SLAC, Southern Methodist Dallas, NPI Petersburg, Stockholm, KTH Stockholm, Stony Brook, Sydney, AS Taipei, Tbilisi, Tel Aviv, Thessaloniki, Tokyo ICEPP, Tokyo MU, Toronto, TRIUMF, Tsukuba, Tufts, Udine/ICTP, Uppsala, Urbana UI, Valencia, UBC Vancouver, Victoria, Washington, Weizmann Rehovot, FH Wiener Neustadt, Wisconsin, Wuppertal, Yale, Yerevan



# ATLAS

0712/mh-26/06/97



**Length : ~ 46 m (150 ft)**  
**Radius : ~ 12 m (40 ft)**  
**Weight : ~ 7000 tons**  
**~  $10^8$  electronic channels**  
**~ 1800 miles of cables**  
**~10 kW of electrical power**

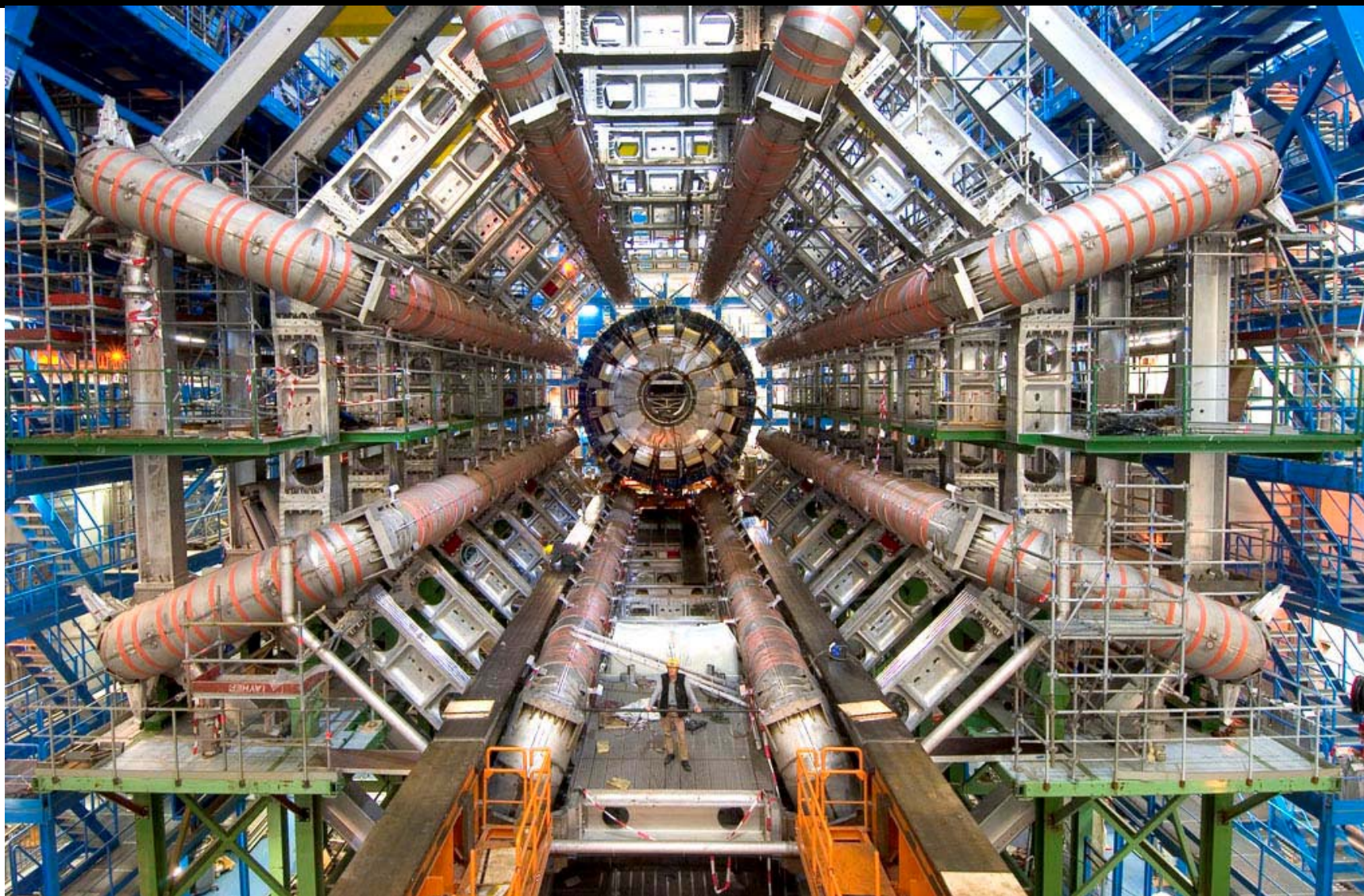
*A person*

Experiments: 4/14/09



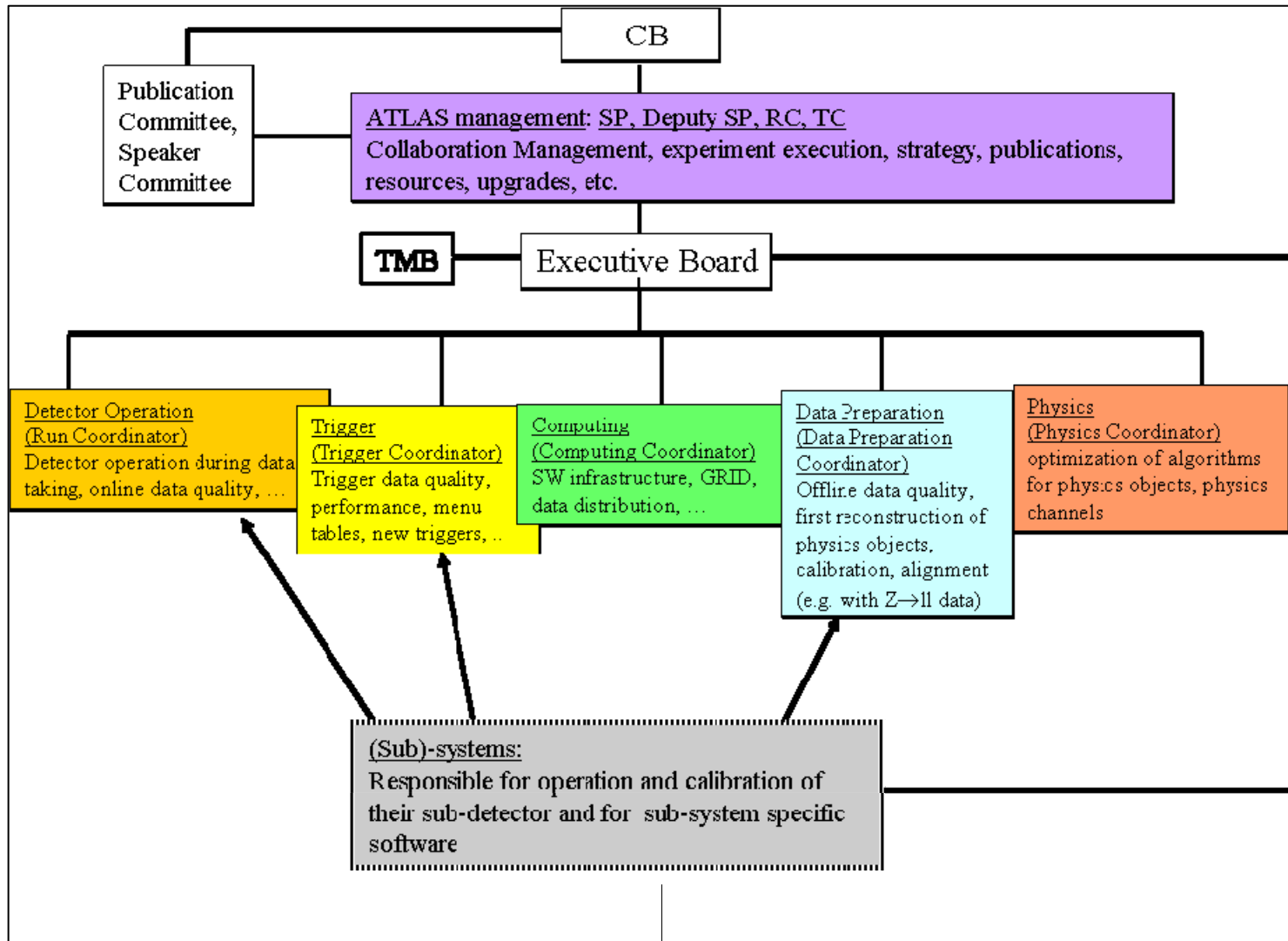


# Iconic View of ATLAS





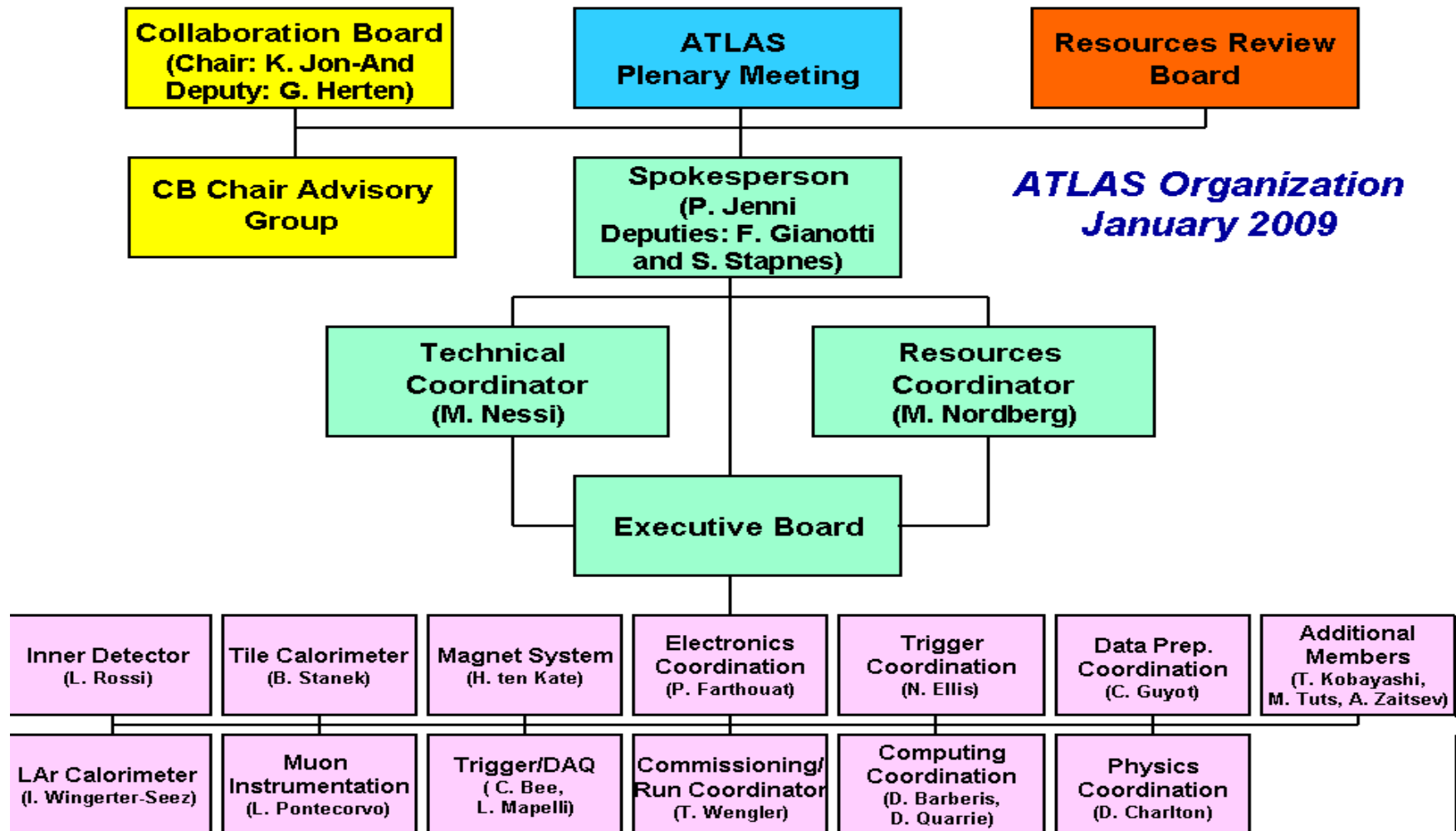
# Operations Model







# Current Organization of ATLAS





# Further Organization of ATLAS

<b>Coordination</b>	<b>Systems</b>	<b>Working Groups</b>
<b>Installation &amp; Commissioning</b>	<b>Inner Detector</b>	<b>Magnetic Field</b>
<b>Software &amp; Computing</b>	<b>Magnets</b>	<b>Luminosity &amp; Forward Physics</b>
<b>Trigger</b>	<b>LArg Calorimeter</b>	<b>High Luminosity Upgrades</b>
<b>Data Preparation</b>	<b>Tile Calorimeter</b>	<b>Education/Outreach</b>
<b>Physics</b>	<b>Muon Spectrometer</b>	
<b>Operation</b>	<b>Trigger/DAQ/DCS</b>	
	<b>Shielding &amp; Radiation</b>	





# The Management

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- The Spokesperson and Deputy Spokespersons have the responsibility to globally overview all aspects of the ATLAS project, and to react appropriately. The Spokesperson represents ATLAS with respect to CERN, funding agencies and other outside bodies.
  - ♦ The Spokesperson is elected for a two year term with the possibility of one additional two year term. The Spokesperson nominates two Deputies which are endorsed by the Collaboration Board
- The Technical Coordinator is responsible for the common project construction and the technical integration of all ATLAS components. He or she should also overview the implementation of ATLAS engineering standards and procedures, and also monitor the detector construction. He or she is assisted by activity managers.
- The Resources Coordinator is responsible for the overall resource planning, and to ensure that the ATLAS resource needs are consistent with the different local national planning. The Resources Coordinator is also directly responsible for the administration of the ATLAS common fund.
- CERN as Host Lab endorses all of these positions. The Technical Coordinator and Resources Coordinator are CERN employees.



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# ATLAS Meetings

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Indico [ATLAS Meetings]



Home > Experiments > ATLAS Meetings

3 february 2009 Detail: agenda apply

2009 > >>

Fr Sa Su

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6 7 8

13 14 15

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27 28

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<< < Tuesday 03 February 2009 > >>

09:00	<b>Trigger Workshop, 2-6 February</b> (Ellis, Nick; Wu, Xin; Bee, Chris; Rajagopalan, Srin) (Dorint Blüemlisalp, Beatenberg, Interlaken )
09:30	<b>LAr Week February 2009 - in Marrakech</b> (Isabelle Wingerter-Seez) (Marrakech )
09:30	<b>Configuration &amp; Controls WG</b> (Igor Soloviev; G. Lehmann Miotto) (CERN 40-R-C10)
14:00	<b>Muon Steering Group</b> (L. Pontecorvo) (CERN tokyo room 188)
14:00	<b>ID Low pT Bi-Weekly</b> (Bell, William H.) (CERN 32-S-C22)
14:00	<b>Muon Steering Group</b> (L. Pontecorvo) (CERN tokyo room 188)
16:00	<b>Software/DP session during LARg week</b> (Marrakech room Agadir)
16:00	<b>Jet Calibration Task Force Meeting</b> (Dr. Schwartzman, Ariel; Fullana Torregrosa, Esteban) (CERN 32-S-C22)
16:30	<b>Inserted B-Layer Eng. Meeting</b> (Danilo Giugni) (CERN 32-S-C22)
17:00	<b>ATLAS Software Validation Reports</b> (M. Gallas, D. Costanzo) (CERN (phone meeting) )
17:00	<b>ATLAS Pixel DSP Meeting</b> (Biesiada, Jed) (CERN 304-1-007)

CERN Indico 0.96.2.20090130 | pcuds71 | http://indico.cern.ch/categ/112 | HELP

*Indico is a GREAT system for distributing and archiving talks.*





# ATLAS Meetings

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- **ATLAS Collaboration Board meets 3 times/year**
  - ◆ **Votes on appointments: Spokesperson; endorses other positions e.g. Subsystem Leaders (who are voted on by that Subsystem);**
- **ATLAS Executive Board and Technical Management Board meets ~monthly**
  - ◆ **The *Executive Board (EB)* is the main body for directing the execution of the ATLAS project and for direct communication between the ATLAS management and the systems. It monitors the execution of the individual systems and discusses matters involving several systems. The EB meets about once per month, and the meetings are prepared by the Spokesperson who chairs them.**
  - ◆ **There is an all day Open Meeting and a Closed meeting.**
- **ATLAS Management Meets weekly**
  - ◆ **Spokespersons, Deputies, Resource and Technical Coordinator**



## Other Entities

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- The CB Chair Advisory Group meets at each ATLAS week. The membership of the group is chosen by the CB Chair, and has to be ratified by the Collaboration Board. The group is intended to provide informal input from the collaboration on planning and policy matters and to serve as a sounding board for the evolution of ATLAS procedures. It also represents one source of members for special ATLAS working groups on planning or policy issues. This group also serves as the core of the nominating committee for the election of the ATLAS spokesperson.





# Other Entities

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- Speakers Committee

- ◆ This group was first established at the CB meeting of 26th June 2000. A set of guidelines was endorsed and a committee elected. The committee originally consisted of 3 people each with 3 year terms. In October 2006 the CB decided to increase the size to six people each with 3 year terms.

- In addition, a Speakers Committee Advisory Board has been set up at the Collaboration Board meeting on 6th October 2006, and a mandate of both committees was endorsed.

- ◆ The primary functions of the Speakers Committee Advisory Board (SCAB) are:
  - To aid the Speakers Committee by preparing a list of ATLAS members who should be given priority for ATLAS speaker assignments,
  - To provide oversight to the collaboration regarding both the guidelines used in speaker selection and the equitable distribution of talks among the members of the collaboration.



# Other Entities

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- **Publications Committee**
  - ♦ **The purpose of this committee is to:**
    - Developing the ATLAS publications policy for approval by the Collaboration Board.
    - Overseeing the preparation of ATLAS Publications.
    - Participating in the release of preliminary results (CONF Notes) and proceedings (PROC Notes).
    - Identifying suitable journals for ATLAS Publications.
    - Refereeing Project Publication and Public (PUB) Notes.



# Other Entities

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- **Authorship Committee**

- ◆ The authorship committee is a small committee formally setup, as subgroup of the Publications Committee overseeing the ATLAS author list [\(1\)](#), at the 25th June 2004 Collaboration Board meeting.

- **Authorship rules**

- ◆ Have been an ATLAS member for at least one year.
- ◆ Not be an author of another major LHC collaboration at the time of application (this rule applies to all physicist, but an exception may be made for engineers).
- ◆ Have spent at least 80 working days and at least 50% of their available research time during the year doing ATLAS technical work (defined in the Appendix of the Authorship Policy document). The total of 80 days technical work may be accumulated over more than one year in exceptional circumstances.
- ◆ Having satisfied the above, it is up to the person's ATLAS team leader to apply to the Chairperson of the Authorship Committee, stating the case for authorship in form of a short e-mail. Based on this case, the Chairperson will make a recommendation to the Spokesperson. The ultimate decision in all cases lies with the Spokesperson, who should consult with the AC and the Collaboration Board Chairperson in case of problems.



# Physics Groups

- **Physics Groups**

- B Physics WG  
Standard Model WG  
Higgs WG  
SUSY WG  
Top WG  
Exotics WG  
Heavy Ions WG  
Monte Carlo WG

S. Hassani, C. Petridou  
M. Bosman, R. Hawkings  
L. di Ciaccio, S. Tapprogge  
A. Nisati, K. Assamagan  
G. Polesello, P. de Jong  
E. Ros, P. Savard  
B. Wosiek, P. Steinberg  
O. Jinnouchi, J. Katzy

- **Combined Performance Groups**

- e/gamma WG  
Flavour Tagging WG  
Jet/EtMiss WG  
Tau WG  
Muon WG

• D. Froidevaux, L. Serin  
L. Vacavant, G. Watts  
J. Proudfoot, T. Carli  
W. Mader, Y. Coadou  
C. Schiavi, D. Orestano

***Terms for 2 years – overlapping second person by a year. Appointed by Physics Coordinator in consultation with Physics Coordination with nominations from the Collaboration.***





# Technical Coordination

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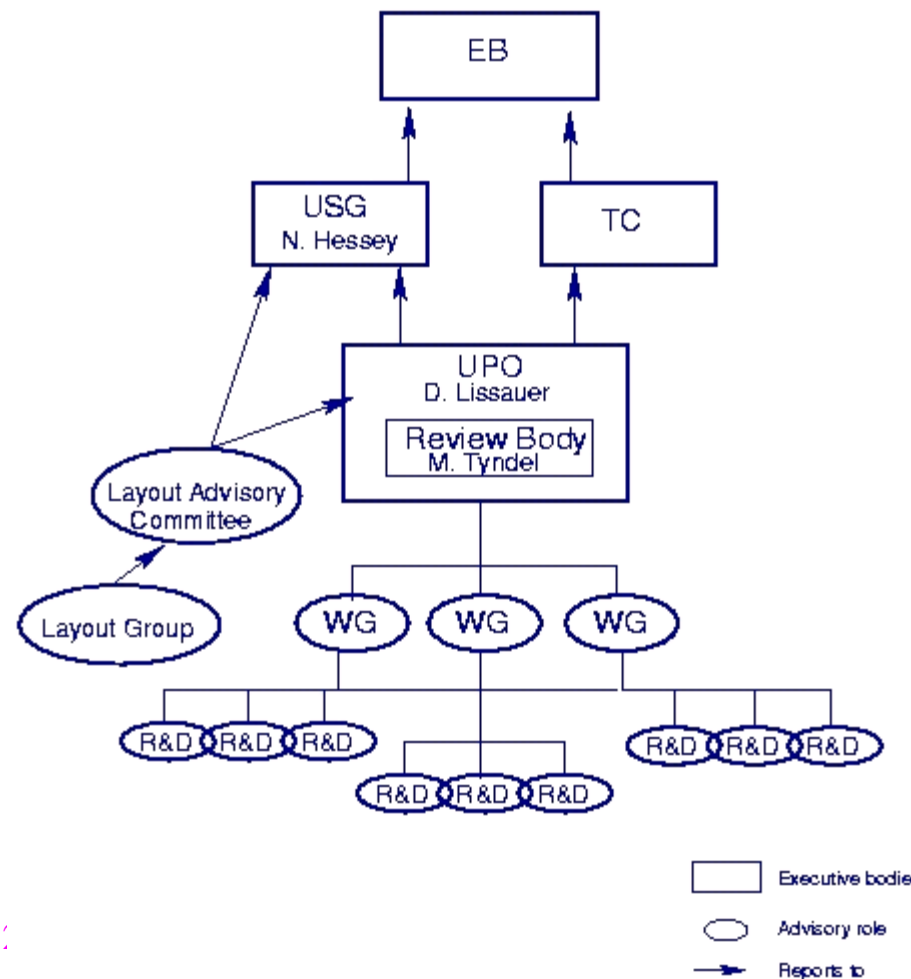
## TC Project Office David Lissauer

- Cern Divisional Relations Patrick Fassnacht
- Detector Construction Liaison Marzio Nessi  
(interim)
- Electronics & Signal Processing Philippe  
Farthouat
- Common Systems Marzio Nessi (interim)
- Integration Mark Hatch
- Installation Geoffrey Tappern
- Logistics & Experimental Areas Francois Butin
- Commissioning Giuseppe Mornacchi and  
Pascal Perrodo



# Upgrade Organization

## ATLAS Upgrade Organisation



*This is aimed at Upgrades for 2014 and 2019 for current and possible additional luminosity upgrades of the LHC. Upgrade Construction will follow the initial construction with enhanced TC Project Office involvement*

Experiments: 4/14/09



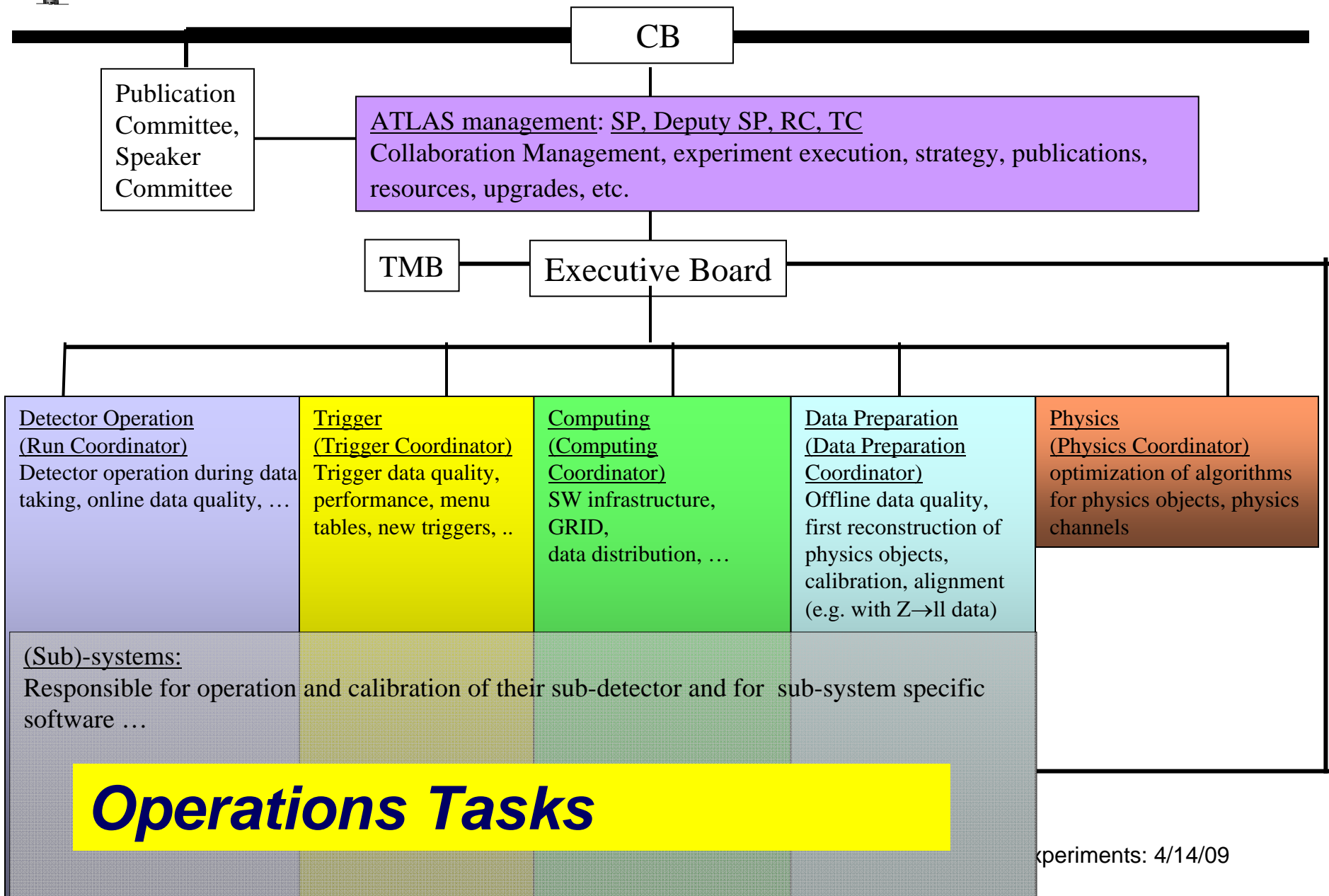
# Construction and M&O MOUs

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- There were documents which specify the rights and responsibilities of each national entity in the Construction of ATLAS and now in M&O.
- For Computing, there is a separate (but parallel) MOU for the Worldwide LHC Grid Computing Project: WLCG
- We pay about \$15,000 per Ph.D. author each year for Cat. A & B costs which are scrutinized by an international body.



# Operation Task Planning in ATLAS







# Operation Task(OT) Sharing

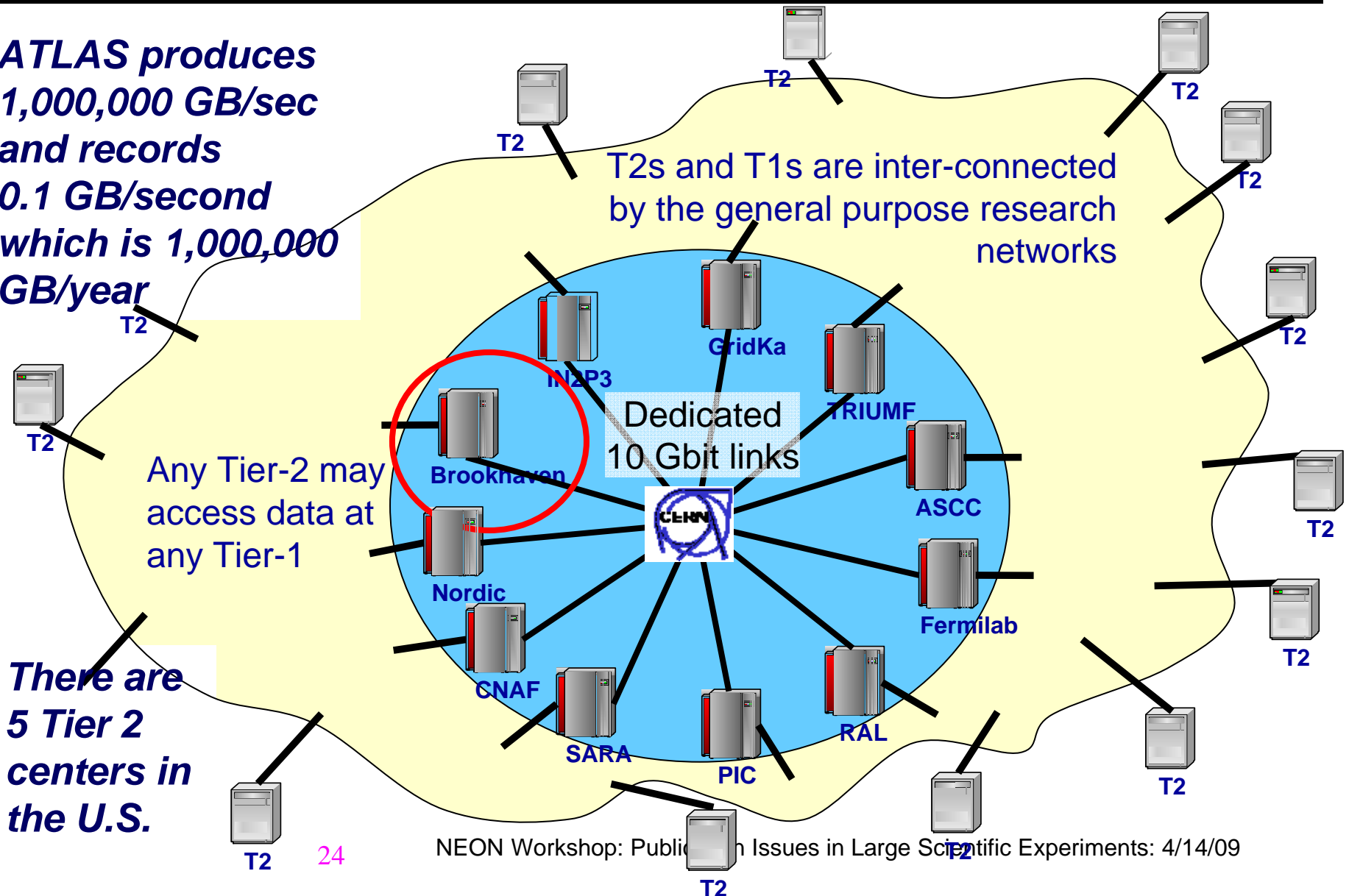
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- Each Ph.D. author counts as 1 and each graduate student as 0.75.
- Each system and activity estimate the tasks and divide them into expert and those for “normally competent ATLAS physicists”.
- Count up all the Operations Tasks – each institution has a fractional share proportional to the number of authors as above
  - ♦ Each author on average has to do 0.33 FTE OT
- A web-based software tool allows one to sign up for tasks/shifts and does the accounting
- A committee handles disputes/special requests.



# Worldwide LHC Grid

**ATLAS produces  
1,000,000 GB/sec  
and records  
0.1 GB/second  
which is 1,000,000  
GB/year**





# Data Formats

<u>Format</u>	<u>Size(MB)/evt</u>
RAW - data output from DAQ (streamed on trigger bits)	1.6
ESD - event summary data: reco info + most RAW	0.5
AOD - analysis object data: summary of ESD data	0.15
TAG - event level metadata with pointers to data files	0.001

## DPDs

D1PD: according to streaming boundaries

~subset, refined, little brother of AOD

D2PD: specific to physics group, or subgroup

still undefined—certainly augmented

D3PD: flat roottuple

pDPD: performance DPD, calibrations...etc

**~25kB**

**~30 kB**

**~5 kB**

***Since we have HUGE data sets (>pB), a special challenge is to make sure every U.S. scientist has access to the data needed to do effective analysis.***

[illegible]





# Approval of Results

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- [https://twiki.cern.ch/twiki/pub/Atlas/OperationModelOverviewDocument/physics\\_policy.pdf](https://twiki.cern.ch/twiki/pub/Atlas/OperationModelOverviewDocument/physics_policy.pdf)
- It is vital that all analyses published by ATLAS be documented in detail and, if at all possible, reproducible by the Collaboration, at any point in time, without the need to obtain information from the original authors of the analysis.
- 2.1 Algorithms for production of AOD (Analysis Object Data) samples
  - ◆ 1. All analyses must be based on AOD (both data and Monte Carlo samples) which have been produced either centrally or under the responsibility of an analysis group. These samples are called here “official samples”.
  - ◆ 2. The algorithms and tools used for the production of official samples must be approved and validated by the relevant analysis group. They should be part of an official software release.
  - ◆ 3. The algorithms will be driven by parameters which can be set in jobOptions. The analysis groups will define the parameter settings for their dedicated productions. The complete parameter settings must be documented in an exhaustive way and permanently stored, to allow reproduction of the relevant data sets.



# Approval of Results

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- **2.2 Algorithms for user analysis**

- ◆ 1. The algorithms for physics analysis starting either from the AOD or derived “Ntuple” formats, are developed by the individuals performing the analysis. Once these studies are mature enough to be submitted for consideration for approval, the analysis code must be made available to the appointed Analysis Reviewers (see Section 4.1 below). Any analysis code must be in such a format that it can be run starting directly from officially produced ESD, AOD or Ntuples. In case of analyses based on statistical methods that require the training of algorithms, the details of the samples and techniques used for the training should be made available.
- ◆ 2. Once the analysis is ready for consideration for Collaboration-wide approval, all the analysis code must become available in a public repository, together with all the information needed to reproduce the analysis. This information must be archived in a permanent form for future reference.
- ◆ 3. In cases where the ‘physics result’ is one of the parameters of the theoretical prediction, for example a coupling constant, or a particle mass, that is obtained from a fit to the data, the tools needed to extract these parameters must also be documented and archived. This is particularly important in those cases where theoretical tools are not part of the standard ATLAS software suite.



# Approval of Results

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- All ATLAS analyses should be discussed and presented in the context of an analysis group.
- When an analysis begins to reach maturity, the conveners of the analysis group shall inform the Physics Coordinator who will select a team of 2-3 people acting as “Analysis Reviewers” (AR).
- The first step in the approval for publication of any analysis will be its approval by the relevant analysis group, e.g. a Higgs search in a given channel should first be approved by the Higgs group, with the agreement of the AR and of the Editorial Board appointed to referee the future paper.



# Approval of Results

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- After an analysis is approved by the relevant analysis group, it must be presented at dedicated plenary physics meetings, held typically once every two weeks, and approved there. This ensures that the whole Collaboration participates in the approval process for all physics results. The draft paper describing the analysis and the results should be available on the WEB at least one week before the presentation at the plenary physics meeting, so that all collaborators, in particular those from outside institutes who may not be able to attend the meeting, are able to comment.
- If no major objections as judged by the EdBoard, the paper preparation process will move to the next phase.
- Approval of results for conferences
  - ◆ A similar procedure to that described above, with only a few changes, applies.
  - ◆ All talks for conferences are usually required to undergo a rehearsal.





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# ATLAS Publication Policy

Version 7.1

endorsed by the CB, 20th February 2009

The ATLAS Publications Committee

This document sets out the policy for ATLAS publications during data taking. The emphasis is on General Publications by the complete collaboration. The related policies associated with other documents, in particular the different types of ATLAS Notes, are also reviewed.



# Publication of Results

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- Refereeing and Approval:

- ◆ When a physics analysis is nearing completion, then notification should be sent by the working group Convenors, in consultation with the Physics Coordinator, to the PubComm Chair. The notification should include the proposed title for the paper, the proposed corresponding draft authors (editors), an outline and the proposed journal for submission. The PubComm Chair, in consultation with the working group Convenors, the Physics Coordinator and the Spokesperson, will set up an Editorial Board.
- ◆ The EdBoard will accompany the final phase of the analysis. If the EdBoard cannot endorse the paper draft or the editors are not willing to carry further work through, or a draft cannot be produced in a timely fashion, then the paper will be rejected and the Spokesperson will be immediately notified. The editors have the right of appeal to the Spokesperson, whose decision is final. In case there is a disagreement about the contact persons for the interactions with the EdBoard, the EdBoard Chairperson, in consultation with the relevant Physics Convenors and the Physics Coordinator, will settle the matter.



# Draft Circulation and Response

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- When editors are ready and the EdBoard agrees, their draft will be released to the Collaboration for detailed comments.
- The Collaboration will be notified by email and invited to submit comments within 2 weeks. (in exceptional circumstances, this time can be reduced to 3 days)
- Upon receiving comments, the editors modify the paper correspondingly and comment in writing on the suggestions and questions received.
- The EdBoard decides whether the comments were satisfactorily addressed or much further work is required.
- When the EdBoard believes the paper is close to completion and the comments are accounted for, and if the Physics Coordinator agrees, the EdBoard chair and Physics Coordinator will announce a presentation to an open meeting.
- The EdBoard should meet after this presentation and decide if further comments raised are minor and can be dealt with quickly or if a revised draft is required.



# Concluding Phase

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- When the EdBoard is satisfied that all the comments have been dealt with appropriately, the final draft will be posted. This final draft includes the ATLAS Author List as provided by the Authorship Committee.
- Collaboration members will have one week for a last check of the paper. (exceptional cases can not be reduced to <3 days)
- After this deadline, and any final modifications are made, a final open reading is passed, PubComm Chair in consultation with the EdBoard Chair recommends to the Spokesperson that the paper should be approved for publication. Drafts are sent to the CERN directorate for approval as CERN preprints and are expected to be returned in 1 week or 48 hours.
- Once approved by the Spokesperson, the paper will be sent to the ATLAS secretariat for submission to the chosen journal. The paper should also be sent to the ArXiv preprint server.
- Any journal referee comments are sent to the Physics coordinator, the Chairs of the PubComm and EdBoard for discussion with the editors.



# Approval of results for Thesis

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- The thesis work and results are presented at the relevant analysis group, and approval is given there for presentation in the context of a thesis defense.

The thesis manuscript and the slides for the oral presentation must clearly state that the results are preliminary and not yet official unless they have been approved in the full procedure described above.

- ◆ In the case of an analysis resulting in a discovery, the results cannot be presented in a thesis before the Collaboration has issued the first (usually fast-track) publication.





## Student presentations at national meetings

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- Work presented should be the student's own work, or largely so.
- Work presented should be uncontroversial, should not contradict approved ATLAS results, and should not be judged sensitive. Data analysis results which extend beyond currently approved ATLAS work may often be considered sensitive.
- Slides, or the poster, should be made available for checking at least ten days before the start of the meeting, as spelt out below.
- Plots which contain data should be labelled “ATLAS work in progress”, unless they have been approved by the standard procedures. This labelling should be inside the plot frame.



# Reviews by Funding Agencies

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- In some cases, it may be useful for results not yet approved to be presented in (closed) reviews by Funding Agencies (e.g. to illustrate the participation and role of a given Institute in a physics analysis). Prior to the review, the Spokesperson and the Physics Coordinator should give permission for the material to be presented. Furthermore, no unofficial results can be propagated outside the review context and the reviewers should be explicitly advised of this. As in the case of theses, discovery results can not be presented before the experiment has issued the first publication.



## Confidentiality of ATLAS work, results, meetings and documents

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- **Security is the responsibility of every member of ATLAS. He or she is responsible for complying with the rules of the experiment, which are that physics results not yet approved must not be propagated outside the Collaboration.**



# Open Access

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- Open Access (OA) literature is digital, online, free of charge to the reader, and free of most copyright and licensing restrictions.

[\[read more\]](#)

- CERN's role in the Open Access Movement
- According to the CERN [Convention](#) *"the results of its experimental and theoretical work shall be published or otherwise made generally available."*

In 2005, CERN decided to adopt a specific [Publication Policy](#) to promote Open Access. Read the "[Proposal](#) to establish a Sponsoring Consortium for Open Access Publishing in Particle Physics" by the SCOAP3 [Sponsoring Consortium for Open Access Publishing in Particle Physics] Working Party (March 9, 2007).

For up-to-date information about the SCOAP3 Consortium, check the web site

<http://scoap3.org> [\[read more\]](#)

- Advantages of Open Access to readers and authors
- As a reader: Open Access removes price and permission barriers and allows rapid access to scientific research results
- As an author: Open Access enlarges your audience and increases the visibility and impact of your work [\[read more\]](#)
- Make your research available through Open Access
- Follow the CERN Publication Policy:
- Submit the full text of your papers to the CERN Document Server [\[how to\]](#)
- Choose to publish in a low cost journal [\[how to\]](#)
- What is the future of journals? Can we forecast 10 or 20 years in the future?



# arXiv.org (e-print server)

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- Search or Article-id
- ([Help](#) | [Advanced search](#))
- 
- Open access to 531,303 e-prints in Physics, Mathematics, Computer Science, Quantitative Biology, Quantitative Finance and Statistics
- Subject search and browse: 20 Jan 2009: [Astrophysics \(astro-ph\) archive split into six sub-categories](#)  
4 Dec 2008: [New Quantitative Finance \(q-fin\) archive launched](#)  
3 Oct 2008: [arXiv passes half-million article milestone](#)  
See cumulative ["What's New" pages](#).  
Robots Beware: [indiscriminate automated downloads from this site are \*not\* permitted](#).





# First Workshop on Data Preservation and Long Term Analysis in HEP

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- 26-28 January, 2009 DESY
- Experiments close to the end of the data taking initiate with this workshop a common reflection on data persistency and long term analysis in order to get a common vision on these issues and create a multi-experiment dynamics for further reference. It is foreseen that the workshop is a starting point for intense consultations and common work on defined subject.
- A second follow-up workshop will take place mid 2009.
- The objectives of the workshop are:
  - ◆ Review and document the physics objectives of the data persistency in HEP.
  - ◆ Exchange information concerning the analysis model: abstraction, software, documentation etc. and identify coherence points.
  - ◆ Address the hardware and software persistency status
  - ◆ Review possible fundings programs and other related international initiatives.
  - ◆ Converge to a common set of specifications in a document that will constitute the basis for future collaborations.



# Other Issues

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- Individual Recognition in Large Experiments (promotion, etc.)
  - ♦ Author order?
  - ♦ Still relying on letters of recommendation
  - ♦ IUPAP report:  
<http://www.iupap.org/commissions/c11/reports/wg-assessment-08.pdf>
- Does every author sign every publication?
  - ♦ In one large collaboration, ~1/2 of authors did not sign one preprint
- Combining data with other experiments



# Conclusions

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- The LHC Physics Program has breakthrough discovery potential
  - ◆ The LHC will make an enormous number of precision measurements
  - ◆ The LHC will be the leading component of the world High Energy Physics program from for the next ~20 years.
  - ◆ We plan to have a huge number of significant publications!
- We are really excited with the physics starting soon!



# Essential Websites

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- **ATLAS Home Page:**  
<http://atlas.web.cern.ch/Atlas/index.html>
- **Must see LHC Rap:**  
<http://www.youtube.com/watch?v=j50ZssEojtM>
- **US LHC site (blogs)** <http://uslhcb.org/>
- **ATLAS Public Web Page:** <http://atlas.ch/>
- **Youtube!**  
<http://www.youtube.com/watch?v=leGHW Czq964>

## The Particle Adventure

<http://www.particleadventure.org>